

REMARKS

These remarks are in response to the Office Action dated January 7, 2002. Claims 1 and 4 have been amended. Claims 9-22 have been added. Support for the amended claims is discussed below. Support for the new claims can be found throughout the specification. For example, support for "a polypeptide comprising an antigenic fragment of SEQ ID NO:2," as recited in claims 9, 17 and 22, can be found on page 32, lines 6-23. Support for "a polypeptide consisting of a fragment of SEQ ID NO:2, wherein said fragment comprises at least 50 contiguous amino acid residues of SEQ ID NO:2," as recited in claims 9, 17 and 22, can be found on page 24, lines 11-14. Support for a "hybridoma cell line," as recited in claim 16, can be found at page 33, line 21, bridging to page 34, lines 1-3. Support for an "antibody produced by immunizing an animal..." can be found at page 34, lines 24-29. Support for an antibody that selectively binds a polypeptide "located in the hydrophilic domain of an mth protein between hydrophobic domains five and six of SEQ ID NO:2," and for an antibody that selectively binds to a polypeptide "comprising amino acids 407-420 of SEQ ID NO:2," can be found at page 79, Example 6.

No new matter has been added. Attached is a marked-up version of the changes being made by the current amendment. Claims 1-4 and 6-22 are pending and at issue. Applicants respectfully request reconsideration of the present application.

INFORMAL OBJECTIONS

The Office Action states at part 2 that a reference to U.S.

application. Applicants note that the appropriate paragraph in the specification has been amended to include the requested information.

The Office Action further states at part 2 that a sequence on page 79 of the specification lacks a sequence identifier. Applicants note that the specification has been amended to appropriately identify the sequence.

I. REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

Written Description

Claims 4-8 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Applicants note that this rejection is moot with regard to canceled claim 5. Applicants respectfully traverse this rejection.

Specifically, the Office Action states at part 4 that Applicants have not described the "structural and functional features of mth polypeptides or the conserved regions that would be critical for these features" (page 3, lines 4-6). Applicants respectfully disagree. With regard to the structure of an mth polypeptide, the specification provides: 1) the amino acid sequence for the full-length protein (see SEQ ID NO:2); 2) a hydropathic profile of the mth protein; 3) the identification of alternating hydrophilic and hydrophobic regions characteristic of transmembrane domains associated with GPCRs (see Figure 3);

lines 2-8 and Figure 3C) of the mth polypeptide that is N-terminal to the first transmembrane domain (amino acid residues 1-200 of SEQ ID NO:2).

With regard to the functional characteristics of the mth polypeptide, the specification provides data indicating that: 1) a failure to express mth results in embryonic lethality in *Drosophila* (see page 78 lines 20-22 and Figures 1 and 2, ; 2) intermediate mth expression provides an organism with a higher tolerance for the deleterious effects of stress (see page 78, lines 22-24 and Figures 2A-2C); and 3) full (i.e., wild-type) expression of the mth protein results in a lower tolerance to stress (see page 78, lines 24-27 and Figures 2A-2C). The data clearly indicate that expression of the mth polypeptide is an important component of the system controlling lifespan.

To advance prosecution, however, Applicants have amended independent claim 4 to recite, in part:

A kit ... containing an antibody that selectively binds to a polypeptide selected from the group consisting of:

- a) a polypeptide comprising the amino acid sequence of SEQ ID NO:2, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule comprising SEQ ID NO:1 under stringent conditions, and wherein the polypeptide retains the functional activity of an mth polypeptide;
- b) a polypeptide comprising an amino acid sequence which is at least 35% homologous to the amino acid sequence of SEQ ID NO:2, and wherein the polypeptide retains the functional activity of an mth polypeptide; and
- c) a polypeptide comprising amino acid residues 1 to 200 of SEQ ID NO:2.

Support for part a) of amended claim 4 may be found in the

Support for part b) of amended claim 4 may be found in the specification at page 20, lines 29-33, where "substantially homologous" amino acid sequences are discussed. Support for part c) of amended claim 4 can be found at page 78, lines 2-8, where the specification indicates that the N-terminal segment of the mth amino acid sequence prior to the first TM domain "was not found to share homology with any known sequence."

Applicants believe that the amendments to claim 4 render the rejection moot. Accordingly, Applicants respectfully request that the rejections under 35 U.S.C. §112, first paragraph be withdrawn.

II. REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

Enablement

Claims 4-8 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter not described in the specification in such a way as to enable one of skill in the art to make or use the invention. Applicants note that this rejection is moot with regard to canceled claim 5. Applicants respectfully traverse this rejection.

The test of enablement is whether one skilled in the art could make or use the claimed invention from the disclosures in the patent coupled with information known in the art without undue experimentation. United States v. Telectronics, Inc., 857 F.2d 778, (Fed. Cir. 1988); MPEP §2164.01. As noted above, Applicants have amended the pending claims. Support for the amendments have been previously identified. Applicants believe that a person skilled in the art could easily make and use the

Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. §112, first paragraph be withdrawn.

II. REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Claims 1-8 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants note that this rejection is moot with regard to canceled claim 5. Applicants respectfully traverse this rejection.

Claims 1 and 4 have been amended to recite, in part, an antibody that "selectively binds to a polypeptide" of the invention. In addition, claim 4 has been amended to delete the reference to an "mth binding reagent." Similarly, claim 4 has been amended to delete the "an mth" polypeptide.

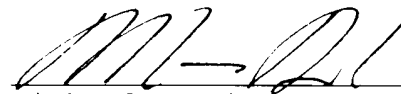
Applicants believe that the amendments render the rejections moot. Accordingly, Applicants respectfully request that the rejections under 35 U.S.C. §112, second paragraph be withdrawn.

In summary, for the reasons set forth herein, Applicants maintain that claims 1-4 and 6-22 clearly and patentably define the invention, respectfully request that the Examiner reconsider the various grounds set forth in the Office Action, and respectfully request the allowance of the claims which are now pending.

If the Examiner would like to discuss any of the issues raised in the Office Action, Applicants' representative can be reached at (858) 678-5070. Please charge any additional fees, or make any credits, to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the specification:

Paragraph beginning at page 1, line 7 has been amended as follows:

This application is a divisional of Application Serial No. 09/370,098, filed August 6, 1999, now Patent No. 6,303,768, which claims priority from Provisional Application Serial No. 60/095,826, filed August 7, 1998, [which is incorporated herein by reference in its entirety and] to which application a priority claim is made under 35 U.S.C. '119(e). Each application is incorporated herein by reference in its entirety.

Paragraph beginning at page 79, line 30 has been amended as follows:

A monoclonal antibody was raised against the MTH sequence AHRQERKQKLNSDK (amino acids 407-420 of SEQ ID NO:2) using techniques well known to those of skill in the art, as described above.

In the claims:

Claim 5 has been cancelled.

Claims 1 and 4 have been amended as follows:

1. (Amended) An antibody that selectively binds to a [the] polypeptide [of SEQ ID NO:2] selected from the group consisting of:

a) a polypeptide encoded by a nucleic acid molecule which
comprises a nucleic acid molecule comprising SEQ ID NO:1

b) a polypeptide comprising an amino acid sequence which is at least 85% homologous to the amino acid sequence of SEQ ID NO:2, wherein the polypeptide retains the functional activity of an mth polypeptide; and

c) a polypeptide comprising amino acid residues 1 to 200 of SEQ ID NO:2.

2. The antibody of claim 1, wherein the antibody is polyclonal.

3. The antibody of claim 1, wherein the antibody is monoclonal.

4. (Amended) A kit useful for the detection of a [n mth] polypeptide, the kit comprising a carrier containing one or more containers comprising a first container containing an antibody that selectively binds to a polypeptide selected from the group consisting of: [mth binding reagent]

a) a polypeptide comprising the amino acid sequence of SEQ ID NO:2, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule comprising SEQ ID NO:1 under stringent conditions, and wherein the polypeptide retains the functional activity of an mth polypeptide;

b) a polypeptide comprising an amino acid sequence which is at least 85% homologous to the amino acid sequence of SEQ ID NO:2, and wherein the polypeptide retains the functional activity of an mth polypeptide; and

c) a polypeptide comprising amino acid residues 1 to 200 of SEQ ID NO:2.

6. The kit of claim 4, wherein the antibody is a human antibody.

7. The kit of claim 6, wherein the antibody is monoclonal.

8. The kit of claim 6, wherein the antibody is polyclonal.

The following claims have been added:

9. An isolated antibody or fragment thereof that selectively binds to a polypeptide selected from the group consisting of:

- a) a polypeptide comprising SEQ ID NO:2;
- b) a polypeptide comprising amino acid residues 1 to 200 of SEQ ID NO:2;
- c) a polypeptide comprising an antigenic fragment of SEQ ID NO:2;
- d) a polypeptide consisting of a fragment of SEQ ID NO:2, wherein said fragment comprises at least 50 contiguous amino acid residues of SEQ ID NO:2.

10. The antibody of claim 9, which is a monoclonal antibody.

11. The antibody of claim 9, which is a polyclonal antibody.

12. The antibody of claim 9, which is a humanized antibody.

13. The antibody or fragment thereof of claim 9, which is a human antibody.

15. A composition comprising the antibody of claims 1 or 9 and a pharmaceutically acceptable carrier.

16. A hybridoma cell line that produces a monoclonal antibody according to claim 1 or claim 9.

17. An isolated antibody or fragment thereof produced by immunizing an animal with a polypeptide selected from the group consisting of:

- a) a polypeptide comprising SEQ ID NO:2;
- b) a polypeptide comprising amino acid residues 1 to 200 of SEQ ID NO:2;
- c) a polypeptide comprising an antigenic fragment of SEQ ID NO:2;
- d) a polypeptide consisting of a fragment of SEQ ID NO:2, wherein said fragment comprises at least 50 contiguous amino acid residues of SEQ ID NO:2, wherein the antibody specifically binds to the polypeptide.

18. An antibody produced by immunizing an animal with a polypeptide having an amino acid sequence as set forth in SEQ ID NO:2, which antibody specifically binds to the polypeptide.

19. An antibody that selectively binds a polypeptide located in the hydrophilic domain of an mth protein between hydrophobic domains five and six of SEQ ID NO:2.

21. A kit comprising an antibody which selectively binds to a polypeptide selected from the group consisting of:

a) a fragment of a polypeptide comprising the amino acid sequence of SEQ ID NO:2, wherein the fragment comprises at least 15 contiguous amino acids of SEQ ID NO:2;

b) a polypeptide comprising the amino acid sequence of SEQ ID NO:2, wherein the polypeptide is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule comprising SEQ ID NO:1 under highly stringent conditions;

c) a polypeptide comprising an amino acid sequence which is at least 85% homologous to the amino acid sequence of SEQ ID NO:2, wherein the polypeptide retains the functional activity of an mth polypeptide,
and instructions for use.

22. A kit comprising an antibody which selectively binds to a polypeptide selected from the group consisting of:

a) a polypeptide comprising SEQ ID NO:2;

b) a polypeptide comprising amino acid residues 1 to 200 of SEQ ID NO:2;

c) a polypeptide comprising an antigenic fragment of SEQ ID NO:2;

d) a polypeptide consisting of a fragment of SEQ ID NO:2, wherein said fragment comprises at least 50 contiguous amino acid residues of SEQ ID NO:2.